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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,810	09/19/2003	Peter H. Xiao	UTCI.007US1	6614

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EXAMINER
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MOON, SEOKYUN

ART UNIT	PAPER NUMBER
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2629

DATE MAILED: 09/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/665,810	XIAO ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Seokyun Moon	2629	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 July 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,5-16 and 27-36 is/are pending in the application.
- 4a) Of the above claim(s) 11-16,29,30 and 32-36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-10,27,28 and 31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>5/17/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election without traverse of **Species III** in the reply filed on July 10, 2006 is acknowledged.
2. **Claims 3, 4, 17-26, and 37-44** are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on July 10, 2006.
3. **Claims 11-16, 29, 30, and 32-36** were elected by the Applicants in the reply filed on July 10, 2006. However, the claims are not readable on the elected figures 5a, 5b, and 6 corresponding to Species III.

A phone call was to James S. Hsue, the Applicants' representative, on September 12 and September 14, 2006 to advise the Applicants to withdraw claims 11-16, 29, 30, and 32-36 since the claims correspond to the non-elected figures, and the Applicants agree to withdraw claims 11-16, 29, 30, and 32-36.

Currently, claims 1, 2, 5-10, 27, 28, and 31 are examined for further prosecution.

### *Priority*

4. Applicant's claim for the benefit of a prior-filed application under 35 U.S.C. 119(e) is acknowledged.

***Information Disclosure Statement***

5. The information disclosure statement (IDS) received on May 17, 2004 has been acknowledged and considered by the Examiner. Initial copy of the form PTO-1449 is included in this correspondence.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. **Claims 1, 2, 5, 6, 27, and 31** are rejected under 35 U.S.C. 102(b) as being anticipated by Tsuchiya (EP 1063558 A1).

As to **claim 1**, Tsuchiya [figs. 7 and 10] teaches an LCD driver comprising a capacitor divider [figs. 8-9 and 11-12] connected to row and/or column electrodes of an LCD, the driver comprising a plurality of capacitors ("C1" and "C2") that are electrically connected to provide voltage level and power for driving the LCD [par. (0008) lines 1-4 and par. (0003) lines 1-6]

As to **claim 2**, Tsuchiya [figs. 7 and 10] teaches the driver comprising two reference nodes (a node on "*first potential-supply line 105*" and a node on "*second potential-supply line 106*") and a third node ("*second midpoint 122*") connected to the reference nodes through capacitors, wherein the values of the capacitors cause a predetermined bias ratio (" $1/2V$ :" $1/2V$ ) of voltage levels to be maintained across the capacitors [figs. 8-9 and 11-12].

As to **claim 5**, Tsuchiya [figs. 7 and 10] teaches the driver comprising a switching device (a combination of the "*switches 101, 102, 103, and 104*") that connects the capacitors to provide suitable voltage levels for driving the LCD.

As to **claim 6**, Tsuchiya [figs. 7 and 10] teaches the switching device connecting the capacitors so that they are connected in parallel to a power source to charge the capacitors, and connected in series to provide voltage levels for driving the LCD [figs. 8-9 and 11-12] [pars. (0052) and (0053)].

As to **claim 27**, all of the claim limitations have already been discussed with respect to the rejection of claim 1.

As to **claim 31**, all of the claim limitations have already been discussed with respect to the rejection of claim 6.

#### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. **Claims 7-10 and 28** are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuchiya and Nakajima et al. (US Pat. No. 6,157,358, herein after referred to as "Nakajima"), and further in view of Applicant's Admitted Prior Art.

As to **claim 7**, Tsuchiya teaches an LCD driver comprising a capacitor divider [figs. 7 and 10] which comprises a plurality of capacitors ("C1" and "C2").

Tsuchiya does not teach a switching device connecting the divider to row and column electrodes of the LCD.

However, Nakajima [fig. 1] teaches a switching device ("22a" and "22b") connecting a driver (a combination of "shift register 16", "data latch circuit 18", "DAC 19", and "buffer 21") to column electrodes of an LCD [col. 3 lines 3-6].

Since Tsuchiya's voltage divider is a part of a LCD driver, it would have been obvious to one of ordinary skill in the art at the time of the invention to include a switching device in Tsuchiya's driver, as taught by Nakajima, in order to allow the Tsuchiya's display device to control the timing of providing voltages to the row and column electrodes, thus to prevent any image degradation.

Tsuchiya modified by Nakajima teaches the device providing suitable voltage levels for driving the electrodes.

Tsuchiya modified by Nakajima does not expressly disclose the waveform of the voltages provided to the row and column electrodes to be IAPT waveform.

However, AAPA teaches a method of driving LCD with IAPT waveform [specification: pars. (0004)-(0009)] .

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to specify the output voltage of Tsuchiya's voltage divider to have a form of IAPT waveform in order to reduce driving voltage dynamic range as compared to plain APT, thus to provide an easier way to design conventional CMOS integrated driver IC [specification: par. (0005)].

As to **claim 8**, Tsuchiya [figs. 7 and 10] teaches the divider to comprise 2, 3, 4, or 5 capacitors.

As to **claim 9**, Tsuchiya [fig. 9] teaches the divider comprising a first ("131") and a second capacitor ("132") connected in series between two nodes (a node on "*first potential-supply line 105*" and a node on "*second potential-supply line 106*"), wherein the first and second capacitors have substantially the same capacitance (derived from the bias ratio of (" $1/2V$ :" " $1/2V$ ")).

Furthermore, Tsuchiya disclose that each of the capacitors to be comprise of a plurality of capacitors [par. (0042)].

Tsuchiya does not expressly disclose the divider to be comprised of a third, a fourth, and a fifth capacitors.

However, specifying the number of the capacitors to be included in the divider is to be determined by the voltage values to be obtained at the output of the divider and thus to be varied depending on the desired voltage output of the divider. Therefore, it is an obvious matter of design choice to specify the number of capacitors included in the divider as five.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Tsuchiya's voltage divider to include five capacitors in order to allow Tsuchiya's voltage divider to provide  $1/5$  of the voltage difference between two nodes to the electrodes.

As to **claim 10**, Tsuchiya [fig. 9] teaches the capacitors to have substantially same capacitance (derived from the bias ratio of (" $1/2V$ :" " $1/2V$ ").

As to **claim 28**, all of the claim limitations have already been discussed with respect to the rejection of claim 7.

### ***Conclusion***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seokyun Moon whose telephone number is (571) 272-5552. The examiner can normally be reached on Mon - Fri (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AMR A. AWAD  
SUPERVISORY PATENT EXAMINER

September 14, 2006  
S.M.

A handwritten signature in black ink, appearing to read "Amr Ahmed Awad", with a stylized flourish at the end.